



Ewa Arleta Kos

<https://orcid.org/0000-0003-3009-7360>
e-mail: ewa.kos@nowa.uni.lodz.pl
University of Lodz, Poland

The Role of Mindfulness, Silence, and Reflection in Developing 4Cs Competencies in Early Childhood Education

Rola uważności, ciszy i refleksji w rozwijaniu kompetencji 4C w edukacji małego dziecka

KEYWORDS

mindfulness, 4Cs,
early childhood
education,
contemplative
pedagogy, creativity

ABSTRACT

The aim of this article is to present the educational potential of contemplative practices – mindfulness, silence, and reflection – in supporting the development of 21st-century competencies, commonly referred to as the 4Cs: creativity, critical thinking, communication, and collaboration. The starting point is the assumption that fostering these competencies in preschool and early primary education requires tools that enhance not only cognitive but also emotional and social dimensions of child development. Drawing on an analysis of the relevant literature, the article discusses both the theoretical foundations of the 4Cs framework and the significance of mindfulness, silence, and reflection within educational contexts. Research findings indicate that regular engagement in contemplative practices promotes cognitive flexibility, strengthens emotional awareness, and enhances communication and collaboration skills in children. The article emphasizes the importance of creating educational spaces in which structured moments of silence, mindful presence, and reflective dialogue become an integral part of daily pedagogical routines. It concludes that the integration of contemplative strategies in early childhood education offers meaningful support for the holistic development of 4C competencies and contributes to the creation of more empathetic and conscious learning environments.

SŁOWA KLUCZE ABSTRAKT

uwagaśność,
4C, edukacja
wczesnoszkolna,
pedagogika
kontemplacyjna,
kreatywność

Celem niniejszego artykułu jest zaprezentowanie edukacyjnego potencjału praktyk kontemplacyjnych – uważności, ciszy i refleksji – we wspieraniu rozwoju kompetencji XXI wieku, powszechnie określanych jako 4C: kreatywność, krytyczne myślenie, komunikacja i współpraca. Punktem wyjścia jest założenie, że rozwijanie tych kompetencji w edukacji przedszkolnej i wczesnoszkolnej wymaga narzędzi wspierających nie tylko poznawcze, lecz także emocjonalne i społeczne aspekty rozwoju dziecka. Na podstawie analizy literatury przedmiotu omówiono zarówno teoretyczne podstawy modelu 4C, jak i znaczenie pedagogiki ciszy, uważności i refleksyjności w procesie nauczania. Wyniki badań wskazują, że regularne angażowanie się w praktyki kontemplacyjne sprzyja elastyczności poznawczej, podnosi świadomość emocjonalną oraz rozwija umiejętności komunikacyjne i współpracy w grupie. W artykule podkreślono także znaczenie tworzenia przestrzeni edukacyjnej, w której momenty ciszy, uważnej obecności i refleksyjnego dialogu stają się elementem codziennej praktyki pedagogicznej. Artykuł kończy się wnioskiem, że integracja praktyk kontemplacyjnych w edukacji wczesnej stanowi ważne wsparcie dla holistycznego kształtowania kompetencji 4C oraz może przyczynić się do budowania bardziej świadomego i empatycznego środowiska uczenia się.

Introduction

Contemporary socio-technological transformations, driven by the rapid advancement of science, digital technologies, and artificial intelligence, have profoundly reshaped the ways individuals live, work, and acquire knowledge. These developments, often described within the framework of the Fourth Industrial Revolution (Industry 4.0), signal a new phase in civilizational progress marked by automation, algorithmization, and the increasing interdependence of technological and human systems. In this context, education systems are confronted with the growing challenge of preparing learners to function effectively in complex, rapidly changing environments (Supena et al., 2021).

Aligned with the principles of 21st-century education, particular emphasis is now placed on developing four interrelated competencies – critical thinking, creativity, communication, and collaboration – collectively known as the 4Cs. These have been recognized by the Partnership for 21st Century Skills as essential for full participation in global, knowledge-based societies.

Scholarly discourse increasingly emphasizes that the development of the 4Cs is indispensable for fostering cognitive flexibility, lifelong learning, and cooperative

engagement in educational and professional contexts (Supena et al., 2021). Importantly, these competencies should be cultivated from the earliest stages of education. Therefore, preschool and early primary education must move beyond traditional knowledge transmission to support children in acquiring foundational competencies needed to navigate the demands of contemporary society.

Despite this, educational practice frequently prioritizes external stimulation and activity-based learning, often overlooking the formative potential of contemplative elements such as silence, mindfulness, and reflection. These seemingly understated strategies may, in fact, provide fertile ground for deep learning, self-awareness, and interpersonal connection – thus meaningfully supporting the development of the 4Cs. This article seeks to examine the extent to which practices of mindfulness, silence, and reflection may contribute to the development of 4C competencies, and to elucidate the underlying mechanisms through which this influence occurs. This article aims to offer a pedagogical argument for the integration of contemplative practices – namely mindfulness, silence, and reflection – into early childhood education as tools for fostering the 4C competencies. Drawing on theoretical perspectives from pedagogy and neuroscience, the author highlights the relevance of contemplative education in an age increasingly defined by sensory overload, haste, and fragmentation.

The method applied in this study is a critical review of scholarly literature. Selected theoretical and empirical works concerning the role of silence, mindfulness, and reflection in the education of preschool and early primary school children were analyzed. Particular attention was devoted to Polish- and English-language literature available in databases such as Google Scholar and ERIC, with a focus on reflective pedagogy, contemplative education, and neurobiological foundations of the development of 21st-century skills, specifically the 4Cs (creativity, critical thinking, communication, and collaboration).

It is important to note that this review does not constitute a systematic literature review in the strict methodological sense. Due to the relatively broad thematic scope and the interdisciplinary nature of the subject matter, the present study adopts the form of a narrative scoping review, aiming to outline the potential links between practices of silence, mindfulness, and reflection, and the development of key 21st-century competencies in early childhood. This approach enables the identification of major interpretative and research directions that may be explored further in future theoretical or empirical inquiries.

This article does not attempt to conduct a meta-analysis of available empirical data. Rather, it seeks to conceptually explore the educational potential of contemplative practices – specifically silence, mindfulness, and reflection – as tools supporting the acquisition of key competencies in early childhood education (theoretical and empirical studies involving preschool-aged children (3–6 years), early school-aged were

included in the literature review. Findings from studies with older children or adults are cited solely to provide theoretical context).

Accordingly, this paper is positioned as a theoretical proposition intended to stimulate further investigation and to provide a conceptual framework for future empirical research in this field.

Thinking, Creating, Communicating, Collaborating – the Theory of 4C Competencies in Early Childhood Education

In pedagogical literature, increasing importance is attributed to so-called 21st-century skills, among which four are considered fundamental: creativity, critical thinking, communication, and collaboration – collectively referred to as the “4Cs” (Saavedra & Opfer, 2012). The development of these competencies at the preschool stage is regarded as strategic for students’ later educational and social success (Fullan, 2013). The cultivation of the 4Cs should not be confined to subject teaching but integrated into everyday pedagogical practice, also addressing the emotional, social, and cognitive development of the child.

Education in the 21st century demands from learners higher-order thinking skills, including critical and creative thinking. These competencies form the foundation for confronting complex problems, rapid technological progress, and social dynamics requiring reflective thinking and innovative solutions (Trilling & Fadel, 2009).

Critical thinking, as emphasized by Lang (2000), is a fundamental skill in problem-solving because it enables students to identify the root causes of difficulties and find appropriate, relevant solutions. Critical thinking is a goal-directed mental process involving problem identification, analysis, and decision-making. A lack of critical thinking skills often results in low perspective awareness in understanding events.

Critical thinking is not limited to a single discipline; it can and should be fostered across various fields of knowledge. Teachers play a key role in designing educational situations that activate this competence (Fullan, 2013; Supena et al., 2021).

Critical thinking in early childhood education manifests itself in, among other things, the ability to ask questions, recognize cause-and-effect relationships, and analyze diverse perspectives (Facione, 2010). Children learn to distinguish facts from opinions and recognize the intentions of others, which is a prelude to advanced cognitive reflection.

Another important competency is creative thinking, understood as the ability to generate innovative and original solutions beyond conventional rules. It allows students to view problems from multiple perspectives and become more open to

problem-solving (Brata et al., 2023). Facione (2010) highlights that creative thinking produces new ideas and action patterns both personally and culturally. Students who demonstrate creativity eagerly engage in intellectual challenges, share ideas, and are receptive to feedback (Brata et al., 2023).

Creative thinking engages divergent abilities (e.g., sensitivity to problems, fluency, flexibility, originality, and elaboration) as well as evaluative skills, such as recognizing gaps and inconsistencies, with a focus on redefining problem situations (Schmidt, 2017, p. 52).

Creativity in young children develops primarily through free play, exploration, and exposure to art and narrative. Symbolic play and creative experimentation foster cognitive flexibility, understood as the ability to generate multiple solutions to a single problem and transfer knowledge to new contexts (Craft, 2005). Research indicates that children who develop creative expression early are more open to innovative solutions in the subsequent educational process (Gabora & Unrau, 2018).

Equally important is communication competence, encompassing not only the ability to convey information orally and in writing but also listening skills, expressing oneself, and writing (Darmuki et al., 2017). Communication is foundational for contemporary educational and social interactions and is key to personal and professional success.

Communication competence involves multiple components, including:

- linguistic knowledge and skills (ensuring understanding and grammatical accuracy),
- the ability to adjust speech based on social perception,
- cognitive skills,
- intentional realization of speech acts,
- social skills related to defining speaking situations,
- interactional abilities reflected in knowledge and application of linguistic and extralinguistic rules,
- and cultural skills connected to participating in group rituals according to norms and values (Smółka, 2004, pp. 15–16).

Building communication competence aims to enhance students' ability to convey ideas precisely, effectively, and systematically. This skill includes subskills such as linguistic ability, contextual understanding, and audience awareness to ensure accurate message transmission (Brata et al., 2023). It is important to remember that the first six years of a child's life constitute the critical period for communication skill development; deficiencies during this time are difficult to remediate later.

Developing communication skills in early childhood encompasses both the refinement of language skills and the development of social and emotional competencies. In this context, educational practices that encourage co-creation of narratives,

collaborative problem-solving, and the presentation of individual ideas are particularly important (Wieczór, 2021).

Collaboration refers to the ability to work effectively and ethically within a team, respecting diversity and making joint decisions to achieve common goals. It includes elements of leadership, decision-making, and group cooperation (Darmuki et al., 2017). Collaboration not only prepares young learners for effective social functioning but also positively impacts their personal development, interpersonal skills, and increases their chances for academic and career success (Musiał, 2024, p. 75).

Collaboration is a key element of group learning. As early as preschool, children experience situations requiring negotiation, sharing resources, and establishing rules together through games and play. They also learn the consequences of violating these norms. Such experiences foster empathy, conflict management skills, and responsibility for shared goals (Lawson et al., 2019). Collaboration develops social skills and also strengthens intrinsic motivation, as children learn that working together leads to more rewarding outcomes (Miśkowiec, 2012).

As one of the key 21st-century competencies, collaboration – alongside communication, critical thinking, and creativity – plays a vital role in shaping student attitudes for life and work in a complex, dynamic world. Collaboration extends beyond mere task completion to include abilities in team decision-making, conflict resolution, shared responsibility, and perspective-taking (Trilling & Fadel, 2009).

It's worth noting that socio-emotional and cognitive skills, such as self-regulation, concentration, and empathy, are the foundation for building the 4C competencies.

Self-regulation, in particular, supports critical thinking and collaboration – children who can control impulses and regulate emotions better analyze problematic situations, while also being able to act appropriately in a group (Diamond & Lee, 2011).

Concentration is linked to communication and creativity. The ability to maintain attention promotes active listening and precise expression, while also enabling the creation of new solutions and ideas.

Empathy strengthens collaboration and communication, as the ability to recognize others' emotions and respond appropriately builds a foundation for understanding, trust, and cooperation. The development of empathy is a key element of education focused on supporting social and moral competencies (Zelazo & Lyons, 2012; Ritchhart et al., 2011).

In summary, early childhood is a “developmental window” for developing the 4C competencies. Supporting children through appropriately designed educational strategies – including both cognitive stimulation and practices that promote emotion regulation – builds the foundation for future educational and social achievements (Craft, 2005).

Mindfulness, Silence and Reflection – the Pillars of the Contemplative Approach in Education Supporting the Development of 4C Competencies

In the process of teaching and upbringing, tools are increasingly being used that were recently marginalized or treated as “alternative”. Among these practices are mindfulness, silence, and reflection, which collectively hold significant potential for supporting children’s psychosocial and cognitive development. Their common denominator is the creation of a space conducive to profound engagement with oneself, others, and one’s own experience, thereby directly fostering key competencies such as self-regulation, empathy, and metacognition – the foundational elements underpinning the development of the 4C competencies.

Silence in educational contexts has traditionally been associated with discipline or inactivity; however, it is progressively recognized as an active constituent of the learning process (Palmer, 1998). Silence facilitates information integration, deepens reflection, and cultivates relational mindfulness – the capacity to be present with others without distraction. In early childhood education, silence may serve as a space for establishing safety, trust, and internal coherence – values essential for effective collaboration and communication (Siegel & Bryson, 2012).

As a pedagogical value, silence remains insufficiently articulated in scholarly discourse. Yet, within frameworks such as contemplative pedagogy (Zajonc, 2006), it functions as a “transformational space” wherein the child can integrate experiences, recognize emotions, and nurture intrinsic motivation. Silence is thus not conceptualized as mere absence of sound, suppression of speech, or denial of self-expression, but as a deliberate suspension of activity and sensory input conducive to deeper cognitive processing and self-regulation (Koopman, 2015; Nitecka-Walerych, 2021).

The phenomenon of silence in pedagogical terms can be construed as positioning the individual along a continuum between overwhelming noise and absolute silence, wherein each person identifies an optimal state that subjectively satisfies current needs. These needs encompass focus, reflection, contemplation, cognitive elaboration, as well as the spontaneous expression of emotions during physical activities (Nitecka-Walerych, 2021; Olearczyk, 2021).

In education based on silence, it is postulated to consciously introduce moments of silence into the educational space as a tool supporting the inner development of the student. Silence, understood not as void or sensory deprivation but as a qualitative domain of contemplation, reflection, and self-awareness, becomes a tool facilitating deeper assimilation of content, enhancement of concentration, and cultivation of mindfulness.

In this context, mindfulness constitutes a complementary construct to the education based on silence. Mindfulness involves intentional, nonjudgmental awareness of present-moment experience. This practice entails attending to one's ongoing experiences with impartiality and equanimity (Zelazo et al., 2018; Schuman-Olivier et al., 2020).

Mindfulness-based interventions, increasingly implemented in educational settings, contribute to enhanced emotional self-regulation, stress reduction, and improved interpersonal relationships, thereby exerting a positive influence on the educational climate and psychological well-being of students (Keng et al., 2011). The integration of the education based on silence with mindfulness practices thus fosters an educational milieu conducive not only to cognitive but also to holistic child development.

Mindfulness in early childhood education does not equate to formal meditation; rather, it encompasses practices such as attentive listening, conscious breathing, smooth transitions between activities, and reflective questioning. These practices enable children to pause, ground themselves in their experience, and strengthen meta-awareness, which serves as the foundation for critical and creative thinking (Ritchhart et al., 2011).

Empirical research consistently demonstrates that regular mindfulness exercises positively impact executive functions, particularly emotional and behavioral self-regulation (Zelazo & Lyons, 2012). Self-regulation – the capacity to modulate one's emotions, impulses, and behaviors – is recognized as a crucial component of school readiness and overall child well-being (Blair & Raver, 2015). Consequently, children develop enhanced ability to identify and manage emotional states and respond adaptively to stress-inducing situations. Children with high self-regulation skills are aware of their emotions and accept them as a natural part of life. They are also able to read the signals sent by their bodies that indicate they are experiencing emotions. A high level of emotional self-regulation allows students to cope with strong emotions by using various methods of self-calming. The results indicate that students with low levels of emotional self-regulation are less likely to cooperate, less assertive, and have lower levels of prosocial behaviour than their peers with medium and high levels of self-regulation (Gajda, 2023).

Regarding attentional capacity, mindfulness practices contribute to prolonged focus and improved selective processing of stimuli (Diamond & Lee, 2011). Within educational contexts, these enhancements translate into greater learning efficiency, better comprehension of instructions, and increased autonomy in problem-solving.

Moreover, the development of empathy and social competencies is significantly associated with mindfulness practices. By fostering introspective abilities and conscious inhibition of reactive responses, mindfulness supports both cognitive empathy

(understanding others' emotions) and affective empathy (emotional resonance), which are vital for interpersonal relationships and effective collaboration (Schonert-Reichl & Lawlor, 2010). Studies reveal that children engaged in mindfulness programs exhibit more prosocial behaviors and fewer impulsive or aggressive reactions (Flook et al., 2010).

In the education based on silence, reflection occupies a central role – not as cognitive analysis (associated with analytical thinking, reasoning, and evaluating situations based on data and logical premises), but as a profound process of self-reflection requiring internal stillness and mindfulness. This entails a deep, attentive, and holistic examination of experience, enabling the child to develop self-awareness, empathy, and emotional insight. Silence, understood as a space of intentional quietude, fosters the self-regulation of attention and emotions in the learner, within which introspective reflection unfolds. The integration of mindfulness practices, grounded in conscious, non-judgmental presence in the “here and now,” not only enhances the relaxing and contrasting function of silence but transforms it into a space for active introspection (Kosz-Szumaska, 2022). As a result, the process of reflection becomes an integral part of learning – students acquire the ability to “pause” and attentively observe their own thoughts and emotions, which supports the development of self-awareness and critical thinking. The literature emphasizes that both silence and mindfulness practices lead to the synthesis of knowledge and experience, transforming the content delivered in the classroom into deeply personal knowledge grounded in the student's own experience. This reflective dimension of education fosters holistic development – intellectual, emotional, and ethical (Kosz-Szumaska, 2022).

The Educational Potential of Silence, Mindfulness, and Reflection in the Context of Developing the 4Cs Competencies Among Preschool and Early School-Age Children

In an era marked by intensive digitalization, sensory overload, and increasing educational demands, silence, mindfulness, and reflection gain significance as alternative strategies for supporting the development of key competencies in children. The potential of these practices is particularly evident within the concept of so-called “21st-century skills,” known as the 4Cs – Creativity, Critical Thinking, Communication, and Collaboration. These four domains – creative and critical thinking, communication skills, and collaboration – are currently regarded as fundamental in preparing children for future challenges. Silence, mindfulness, and reflection not only support

the child's individual emotional and cognitive development but also create conditions conducive to cultivating these competencies.

It is worth noting that although practices such as mindfulness, reflectivity, and the education based on silence are increasingly present in educational discourse, their connections with the development of the 4Cs still require further in-depth analysis. The subsequent sections of this study will demonstrate how silence – as a space for contemplation – mindfulness – as a form of conscious presence – and reflection – as a mechanism for deepening understanding – can jointly create an environment that fosters creativity, critical thinking, collaboration, and communication already at the preschool education stage. From a theoretical standpoint, these practices constitute not only tools for supporting cognitive and emotional development but also activate self-regulatory and metacognitive mechanisms essential for integrated and long-term learning.

An integrated approach to silence, reflection, and mindfulness allows them to be seen not as separate techniques but as elements of a shared developmental space, which – when appropriately introduced – can support all four key 21st-century competencies effectively.

The development of creativity requires creating conditions that encourage children's free exploration, openness to new experiences, and reflective processing of experiences (Craft, 2005). Silence, understood as a qualitative space free from external disturbances, enables a child to withdraw from the overload of stimuli and concentrate on internal creative processes. Being in silence fosters the integration of information and the emergence of new, non-obvious connections between ideas, which is the foundation of divergent thinking – a key component of creativity (Kaufman & Gregoire, 2016).

Mindfulness, in turn, facilitates conscious presence in experience, allowing the child to better observe their surroundings, attend to details, and notice nuances of reality. Such mindful exploration forms a basis for creative activities, as it helps children combine seemingly unrelated elements and use them in innovative ways (Hölzel et al., 2011). Mindfulness practices also introduce elements of playfulness and openness, which, according to L. Vygotsky (1978), are crucial for the development of creativity through interaction with others and the environment.

Reflection enables the conscious processing of experiences along with associated emotions and thoughts, which fosters metacognition – the ability to analyze one's own cognitive and creative processes. As a result, the child learns to recognize, evaluate, and modify their ideas, strengthening creativity as a dynamic and evolving process (Mezirow, 2000). Silence, mindfulness, and reflection create an integrated educational space in which creativity can flourish through the combination of internal calmness, conscious exploration, and deep contemplation of personal experiences.

The development of critical thinking in early childhood education requires an environment that supports not only the cognitive but also the emotional aspects of information processing and enables the child to independently arrive at an understanding of the world. Reflection plays a key role in this process. Through reflection, a child can distance themselves from a situation to understand causal relationships, diverse perspectives, and the consequences of their own and others' actions. The development of critical thinking in children begins precisely with asking questions and recognizing meanings in everyday experiences. Reflection encourages cognitive openness, tolerance for ambiguity, activates children's independent quest for answers, and stimulates metacognitive processes essential for critical thinking (Zelazo & Lyons, 2012). Silence and mindfulness support this process by creating space for reflection and internal information processing. The reduction of external stimuli fosters concentration and deeper thinking, facilitating the child's analysis of situations and more conscious evaluations.

An integrated approach combining silence, reflection, and mindfulness thus creates an educational environment conducive to building critical thinking in children. This competency, cultivated from an early educational stage, forms the foundation for further cognitive, social, and civic development.

Communication – understood as the ability to express thoughts, feelings, and needs clearly, attentively, and appropriately to the situation – is a key component of a child's social and cognitive competencies. In the context of preschool and early school education, developing this skill requires not only practicing linguistic forms of expression but, above all, fostering attentive listening and conscious presence in interactions with others (Roskos & Christie, 2011).

Attentive listening and mindful speech are two mutually complementary pillars of effective communication. The former requires full cognitive and emotional engagement with the other person's message, free from prejudice, interruptions, or automatic reactions. The latter involves consciously choosing words, tone, and manner of expression, taking into account context and the interlocutor's sensitivity. Mindfulness practices help children better recognize their emotional states, which in turn facilitates behavior regulation in communicative situations and nurtures empathetic attitudes toward peers (Schonert-Reichl & Roeser, 2016). Mindfulness also teaches children co-regulation – the synchronization of emotions and speech with others (Siegel & Bryson, 2012).

Silence, as a pedagogical practice, can be an effective tool supporting the development of these skills. Quieting the environment, introducing moments of shared silence or mindful listening to one another, creates conditions conducive to reflective and empathetic dialogue within the group. As T. Olearczyk (2021) observes, silence in an educational context is not an absence of activity but an active space of mindfulness

and internal dialogue that allows children to process information more deeply and build relationships based on mutual understanding.

In summary, communication extends beyond verbal expression to encompass conscious and empathetic participation in the dialogical process. In this context, silence, mindfulness, and reflective presence in relationships become invaluable tools supporting the development of communicative competencies already in early childhood.

Collaboration, as one of the fundamental 21st-century competencies, entails the ability to work with others consciously, mindfully, and empathetically. In early education, it is crucial not only to develop interpersonal skills but also to foster communal attitudes and responsibility for relationships. Practices such as group mindfulness, rituals of silence, or shared moments of reflection can serve as valuable tools in cultivating children's cooperative abilities.

Mindfulness enables group members to align emotionally and cognitively. Such practices promote the building of a climate of trust and mutual respect, facilitating empathy, compassion, and openness to others (Schonert-Reichl & Roeser, 2016). The presence of silence within the group is not merely a moment of rest – it becomes a space of “being together” without pressure to act, which strengthens bonds and helps children understand the dynamics of interpersonal relationships.

Moreover, individual and group reflection conducted in an atmosphere of acceptance and mindfulness can be an effective tool for conflict resolution and enhancing collaborative skills. Children who learn to recognize and name their emotions are also more inclined to understand others' emotions, leading to more constructive approaches to misunderstandings and differences. Reflecting on shared experiences – both successful and challenging – enables participants to analyze interactions, recognize their roles, and learn flexible responses within the group.

Furthermore, practices of silence and reflection may provide the foundation for developing shared compassion, which strengthens the sense of community and responsibility for the well-being of other group members (Jennings et al., 2013). In this perspective, collaboration is not merely a technical skill but an expression of conscious presence in relationships and the ability to co-create meaningful educational experiences.

Summary

The development of the 4Cs – creativity, critical thinking, communication, and collaboration – should proceed in a continuous and balanced manner to optimize children's developmental potential (Brata et al., 2023). Mindfulness practices, silence, and reflection represent valuable pedagogical strategies that significantly support the

holistic growth of preschool and early primary school learners. By facilitating a space for internal stillness and focused presence, these practices enable children to deepen their awareness of internal experiences, foster empathic listening, engage in reflective thinking, and enhance creative problem-solving and critical analysis.

Consequently, contemplative practices constitute powerful tools for nurturing 21st-century competencies through an integrated approach addressing both cognitive and emotional learner needs. Although often marginalized amid the demands of everyday educational settings, their neuroscientific foundations and psychosocial benefits underscore their considerable pedagogical value.

The preschool and early school years mark a critical “window of opportunity” for 4Cs development due to rapid neurocognitive maturation and elevated brain plasticity during this period. Mindfulness-, silence-, and reflection-based interventions are particularly suited to this developmental stage, promoting emotional-cognitive integration and supporting the sustained cultivation of essential skills for both academic success and social participation (Zelazo et al., 2018).

In summary, early childhood is a ‘developmental window’ for shaping 4C competencies. Supporting children through appropriately designed educational strategies – including both cognitive stimulation and practices that promote emotional regulation – lays the foundation for further educational and social achievements (Craft, 2005).

It should be noted that although the pedagogical potential of contemplative practices in early childhood and early school education is increasingly recognised, there are still significant gaps in the literature. Firstly, most of the research to date has been exploratory in nature and based on small samples, which limits the possibility of generalising the results. In the future, research based on long-term and more extensive empirical projects is needed to assess the lasting impact of mindfulness, silence and reflection on the development of 4C competences in children.

Secondly, there is still a lack of in-depth analysis of how contemplative practices support social-emotional and cognitive development in the context of early childhood education. Interdisciplinary research is needed that combines the perspectives of developmental psychology, didactics and neurobiology to better understand the process of developing empathy, self-regulation and communication skills through the practice of mindfulness. Only such an approach will enable the full potential of silence, mindfulness and reflection to be exploited in shaping the key competences for 21st century education.

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